A.SSE.A.2: Factoring Polynomials 3

1 Factored completely, the expression $12x^4 + 10x^3 - 12x^2$ is equivalent to
1) $x^2(4x + 6)(3x - 2)$
2) $2(2x^2 + 3x)(3x^2 - 2x)$
3) $2x^2(2x - 3)(3x + 2)$
4) $2x^2(2x + 3)(3x - 2)$

2 Factored completely, $m^5 + m^3 - 6m$ is equivalent to
1) $(m + 3)(m - 2)$
2) $(m^2 + 3m)(m^2 - 2)$
3) $m(m^4 + m^2 - 6)$
4) $m(m^2 + 3)(m^2 - 2)$

3 Factor: $2x^2 + 3x - 2$

4 Factor: $3a^2 + a - 2$

5 Factor: $3x^2 - 5x - 12$

6 Factor: $4a^2 + 9a - 9$

7 Factor: $4a^2 + 11a - 20$

8 Factor: $10x^2 + 11x - 6$

9 Factor: $12a^2 + 14a - 6$

10 Factor: $16c^2 - 48c + 35$

11 Factor completely: $3t^3 + 5t^2 - 12t$

12 Factor $6x^3 + 33x^2 - 63x$ completely.

13 Factor: $x^4 + \frac{x^2}{2} + \frac{1}{16}$

14 Factor: $9x^4 - 12x^3 + 4x^2$

15 Factor: $2x^8 + 16x^7 + 32x^6$

16 Rewrite the expression $\left(4x^2 + 5x\right)^2 - 5\left(4x^2 + 5x\right) - 6$ as a product of four linear factors.

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Answer Section

1 ANS: 4
$12x^4 + 10x^3 - 12x^2 = 2x^2(6x^2 + 5x - 6) = 2x^2(2x + 3)(3x - 2)$

REF: 061008a2

2 ANS: 4
$m^5 + m^3 - 6m = m(m^4 + m^2 - 6) = m(m^2 + 3)(m^2 - 2)$

REF: 011703aii

3 ANS:
$(2x - 1)(x + 2)$

REF: 069503al

4 ANS:
$(3a - 2)(a + 1)$

REF: 069802al

5 ANS:
$(3x + 4)(x - 3)$

REF: 030501al

6 ANS:
$(4a - 3)(a + 3)$

REF: 099503al

7 ANS:
$(4a - 5)(a + 4)$

REF: 010502al

8 ANS:
$(5x - 2)(2x + 3)$

REF: 090402al

9 ANS:
$2(2a + 3)(3a - 1)$

REF: 060502al

10 ANS:
$(4c - 7)(4c - 5)$

REF: 069707al

11 ANS:
$t(3t - 4)(t + 3)$

REF: 010111siii

12 ANS:

$6x^3 + 33x^2 - 63x$

$3x(2x^2 + 11x - 21)$

$3x(x + 7)(2x - 3)$

REF: 061628a2

13 ANS:

$\left(x^2 + \frac{1}{4}\right)\left(x^2 + \frac{1}{4}\right)$

REF: 030003al

14 ANS:

$x^2(3x - 2)(3x - 2)$

REF: 039506al

15 ANS:

$2x^6(x + 4)(x + 4)$

REF: 019004al

16 ANS:

The expression is of the form $y^2 - 5y - 6$ or $(y - 6)(y + 1)$. Let $y = 4x^2 + 5x$:

$\left(4x^2 + 5x - 6\right)\left(4x^2 + 5x + 1\right)$

$(4x - 3)(x + 2)(4x + 1)(x + 1)$

REF: fall1512aii